

ADAPTIVE WEB BASED TUTORING SYSTEM FOR MEDICAL STUDENT:  
GYNECOLOGY

SITI SABILAH BINTI MOHD ABDULLAH

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## **ABSTRACT**

In higher level of education, student is more independent in their study without having fully lecturer attention such as in high school. This paper discuss on Adaptive Web Based Tutoring System which is created for medical student to provide them with an online education for their better understanding about the theory, process, and concepts through interactive and effective way. This system is design based on three level of adaptation which are basic, intermediate, and advanced for help student in understanding the concept based on their capabilities.

Keyword: Adaptive Web Based Tutoring, Interactive, Independent.

## **ABSTRAK**

Di peringkat pengajian tinggi, pelajar lebih berdikari sewaktu belajar tanpa mendapat perhatian yang sepenuhnya daripada pensyarah seperti di sekolah menengah. Kertas kerja ini membincangkan tentang Sistem Tutorial Penyesuaian Berasaskan Web yang diciptakan untuk pelajar medikal bagi menyediakan mereka pembelajaran dengan melayari internet bagi tujuan memahami dengan lebih baik lagi tentang teori, proses, dan konsep melalui cara yang interaktif dan berkesan. System ini di reka berdasarkan tiga peringkat penyesuaian di mana ianya adalah asas, pertengahan dan atas untuk membantu pelajar dalam memahami konsep berdasarkan kebolehan mereka.

**Keyword:** Sistem Tutorial Penyesuaian Berasaskan Web, Interaktif, Berdikari.

## TABLE OF CONTENTS

CHAPTER	TITLE	PAGE
<b>1</b>	<b>INTRODUCTION</b>	
	1.0 INTRODUCTION	1
	1.1 Problem Statement	2
	1.1.1 Background of Study	2
	1.1.2 Objective of the Study	2
	1.2 Review of Previous Work	3
	1.3 Current System and Limitations	3
	1.4 Terminology	4
	1.5 Method(s) of Approach	5
	1.6 Indication of Scope and Limitation of Study	6
	1.7 Outline of Material	7
<b>2</b>	<b>REPORT BODY</b>	
	2.1 Introduction	8
	2.1.1 Introduction to Adaptive Web Based Tutoring System	8
	2.1.2 User Requirement	9
	2.1.3 Existing Courseware	10
	2.2 Flow Chart / Storyboard	13
	2.2.1 Flowchart	13
	2.2.2 Story Board	15
	2.3 Methodology	19
	2.4 Technical Result and Comparison with Previous Work	21

2.5 Discussion Analysis Material	23
2.6 Testing Plan and Result	24
2.6.1 Testing Function	25
2.6.2 Questionnaire Result and Analysis	30
2.6.3 Design Project	38
2.6.4 Detail Module Description	39
<b>3 CONCLUSION</b>	
3.0 Conclusion	53
<b>REFERENCES</b>	54
<b>APPENDIX</b>	
<b>QUESTIONNAIRE SYSTEM TESTING</b>	55
<b>USER REQUIREMENT</b>	56
<b>PLAGIARISM RESULT</b>	57
<b>GANTT CHART</b>	58

## LIST OF TABLE

TABLE	TITLE	PAGE
1	Comparison between existing system	22
2	Testing Function	25

## **LIST OF FIGURES**

<b>FIGURE</b>	<b>TITLE</b>	<b>PAGE</b>
1	Existing Web Based Tutoring System	10
2	Flowchart	13
3	Story Board	15
4	Methodology	19
5	Questionnaire Result and Analysis	30
6	Design project	38
7	Detail Module Description	39
8	Home Page	39
9	Registration Form	40
10	Contact Page	41
11	Sign In Form	42
12	Admin Login Form	43
13	User Menu Page	44
14	Reference Book Page	45
15	Tutorial Page	46
16	Video Page	47
17	Quiz Page	48
18	Quiz Flow	49
19	Quiz Result	51
20	Logout Page	52

## **PART 1**

### **1.0 Introduction**

Nowadays, internet is widely used around the world and it became the tools for people to communicate, working and learning and searching anything. As a student, accessing an online learning tool is important for them in order to find notes, exercise and anything that related to their subject. This tutoring system can reduce time for the student to acquire skills and knowledge (Sykes & Franek, 2003).

Adaptive Web Based Tutoring is one of the learning tools that are comprehensive interactive study tools experience in anywhere, anytime, convenience of internet. In addition, using online system will also provide many advantages because it is more interactive, personalized, and independent learning experience (Dabbagh & Bannan-Ritland, 2005).

Focusing on medical student, the tutoring system is design to help them in understanding the process, theory and terms in their subject effectively. Besides, it also helps them easily to find the resource about the subject while they also can have an exercise through this online learning tool. This tutoring system can be interactive study with the combinations of multimedia components such as sound, video, graphic and animations.

This adaptive web based tutoring system is design for medical student to help them in understanding the topics on gynecology. This tutoring system will come out with the syllabus and all the information related to the subject. Generally gynecology is the study of women. It is focused largely on disorders of the female reproductive organs.



## **1.1 Problem Statement**

During study, there are many types of learning tools that will be used by student to help in their understanding. Mostly, for a medical student, they are still using a book as their resource and they will take a long time to explore the books. Since, there are many processes, theory and terms in their lesson, students are required to cover every single topic in less time.

Instead of that, medical tutoring system is develop as a tools for medical students to help them in understanding all the theory, process and term by using online courseware that will improving their study skill through an interactive and easy way. The courseware will be test to see the effectiveness of the system to the students.

This tutoring system is more effective compare to the traditional tutoring. In traditional tutoring, there are five roles undertaken, including class discussions, role-playing, case studies, question and answer sessions and assessment. All the activities is done manually and it may takes a long times to finish everything. While, by using online web based tutoring, student is able to do all those things in several time where they can have quiz and exercise online besides it provide them with more interactive representations.

### **1.1.1 Background of the Study**

This project is based on the problems faced by medical student that is they are not having enough study materials, only using a book as their reference. This system will help them to improve their study by having an interactive user interface, enough study material with notes and video and adaptive quiz for them.

### **1.1.2 Objective of the Study**

1. To develop medical student tutoring system in web environment for easy access.
2. To embed adaptive technology to the tutoring system according to user knowledge level
3. To test the courseware to a medical student in subject of gynecology to see the effectiveness of the system.

## **1.2 Review of Previous Work**

On the previous research, the researcher define the self-assessment in a feasible, Adaptive Web-Based Testing System is an effective system that provides well-founded assessment as a result of the underlying IRT (Item Response Theory). Its availability through the Internet facilitates access to the system to a large number of students. Moreover, no additional software needs to be installed other than a connection to the Internet and a Web browser tool. Multimedia capabilities can be used in Web-based systems; items with multiple formats can be easily included in tests, making them more interesting and more entertaining (Eduardo Guzmán and Ricardo Conejo,2005).

Besides, the other researcher state that Adaptive and intelligent Web-based educational systems (AIWBES) provide an alternative to the traditional “just-put-it-on-the-Web” approach in the development of Web-based educational courseware (Brusilovsky & Miller, 2001). AIWBES attempt to be more adaptive by building a model of the goals, preferences and knowledge of each individual student and using this model throughout the interaction with the student in order to adapt to the needs of that student. They also attempt to be more intelligent by incorporating and performing some activities traditionally executed by a human teacher - such as coaching students or diagnosing their misconceptions.

## **1.3 Current System and Limitation**

Currently, most of the system nowadays is not provide an adaptive web based tutoring to the user. Basically the system interface is not interactive and difficult for the user to understand because too many instructions need to follow. The result will cause the user depressed and unable to adapt with the system.

Furthermore, the current system is not providing a suitable system that can understand user emotion and thinking. They also not interactive to the user to enable the system act like a tutor for the user. This unable for the user to solve the problem provided in the quiz and hard for them to understand without having enough guideline and resource.

## 1.4 Terminology

- Adaptive learning

Adaptive learning is an educational method which uses computers as interactive teaching devices. Computers adapt the presentation of educational material according to students' learning needs, as indicated by their responses to questions and tasks.

- Knowledge level

The knowledge level rationalizes the agent's behavior, while the symbol level mechanizes the agent's behavior.

- Effectiveness

Effectiveness is the capability of producing a desired result. When something is deemed effective, it means it has an intended or expected outcome, or produces a deep, vivid impression.

## **1.5 Method(s) of Approach**

- **Adaptive presentation**

This technique aims at adapting the web page content, so that it matches the goals, knowledge and other information, stored in the learner model. Therefore in this technique, information is presented in various ways. In a system that utilizes adaptive presentation, web pages are not static, but are dynamically created or assembled piece by piece for each user. For example depending on the learner's level, novice or expert, the system can either present detailed and analytical learning content or only the basic features. Adaptive presentation can be achieved by adding or removing pieces of content, shading pieces, having different versions of pieces, adding explanatory notes, changing the sequence of content etc.

- **Adaptive navigation**

This technique aims at supporting the user at maintaining good orientation during navigation, by altering the appearance of visible links and supplying the appropriate links for guiding the learner towards the most interesting and relevant information. Adaptive navigation can be achieved by adding annotations to links, changing their sequence, hiding or deactivating links. The result is an easier choice of links by the learner.

## **1.6 Indications of Scope and Limitations of the Study**

In this tutoring system, we provided three level of adaptation based on student capabilities which are basic, intermediate and advanced.

### **Level 1: Basic**

This level is a basic level for adaptation. In this level there is no development of user model or any application of adaptive methods. Basically, in this phase, it provide student with the basic information about the subject.

### **Level 2: Intermediate**

Personalization starts in this level. Each individual has different treatments by application of adaptive methods. These adaptive instructional treatments and variables accounting for individual differences were very limited in number.

### **Level - 3: Advanced**

This level of the adaptive system includes a few essential individual variables to apply common adaptive methods. However, most of the adaptations occur with the interface, content and navigation of the system. Further, some of these systems have not been fully developed to monitor student progress and their action to update user models.

## **1.7 Outline of Material**

This project contains two parts only which is part 1 that reviews about the overview of the study including introduction, problem statement, objectives, method of approach, scope of study and outline of material. Part 2 review the previous research that has been conducted by others. This includes reviewing book and articles related to the gynecology tutoring system. Besides, review about methodology, design, techniques, reference, the result and conclusion.

## **PART 2**

### **2.1 Introduction**

This part will describe about the literature review of the project which is including the review about the system, user requirement, and overview to the existing system. This part also describe about the flow and storyboard of the system. Besides, explain the methodology that will used to develop the system.

#### **2.1.1 Introduction to Adaptive Web Based Tutoring for medical student**

Current research in the field of adaptive learning system, create an interactive online system that makes creation, management, and use of course materials and communication among course members more effective and efficient tutoring system for medical students. This approach is focus on investigating the effectiveness of the system to a medical student based on their advantages and disadvantages.

Unlike traditional method, this adaptive web based tutoring system provides student with the adaptive user interfaces in order to enhance the operating capabilities of interactive system by applying the adaptive system functionality. The functionality involved is the system is divided into three knowledge level depending on student's learning capability which is basic, intermediate and advanced. It provides student to get easier in understanding the concept of the subject.

For a basic knowledge level, it content is more generally and easy terms approach. While for intermediate knowledge level, the content is more details and standard approaching. Beside, for advanced knowledge level, the content is very details and advanced approaching. However, this tutoring system provided them with the same course outcomes but different types of learning adaptations.

### **2.1.2 User Requirement**

User requirement basically discuss about user needs on the system.

A respondent that have been ask about the requirement to this system is NURUL ISMAH BT CHE HARUN. She is the one of the medical student in University Technology Mara (UiTM) which is 5<sup>th</sup> year student.

Basically, when asking her about technology and multimedia, she gives a response that she has a basic knowledge about the technology and multimedia. However, her institution doesn't use the tutoring system as a tool for education. Until now, she still uses the old way by referring to a book as their main tool. Moreover, she also refers to her lecturer and internet.

From the survey, user facing some problem regarding to their study time which is include there are too many syllabus to cover and she don't have enough time to finish every topics in less time. Besides, when asking about Adaptive Web Based Tutoring System, she doesn't really know about the tutoring system. But she also wishes to use tis online tutoring system in order to help medical student during their study.

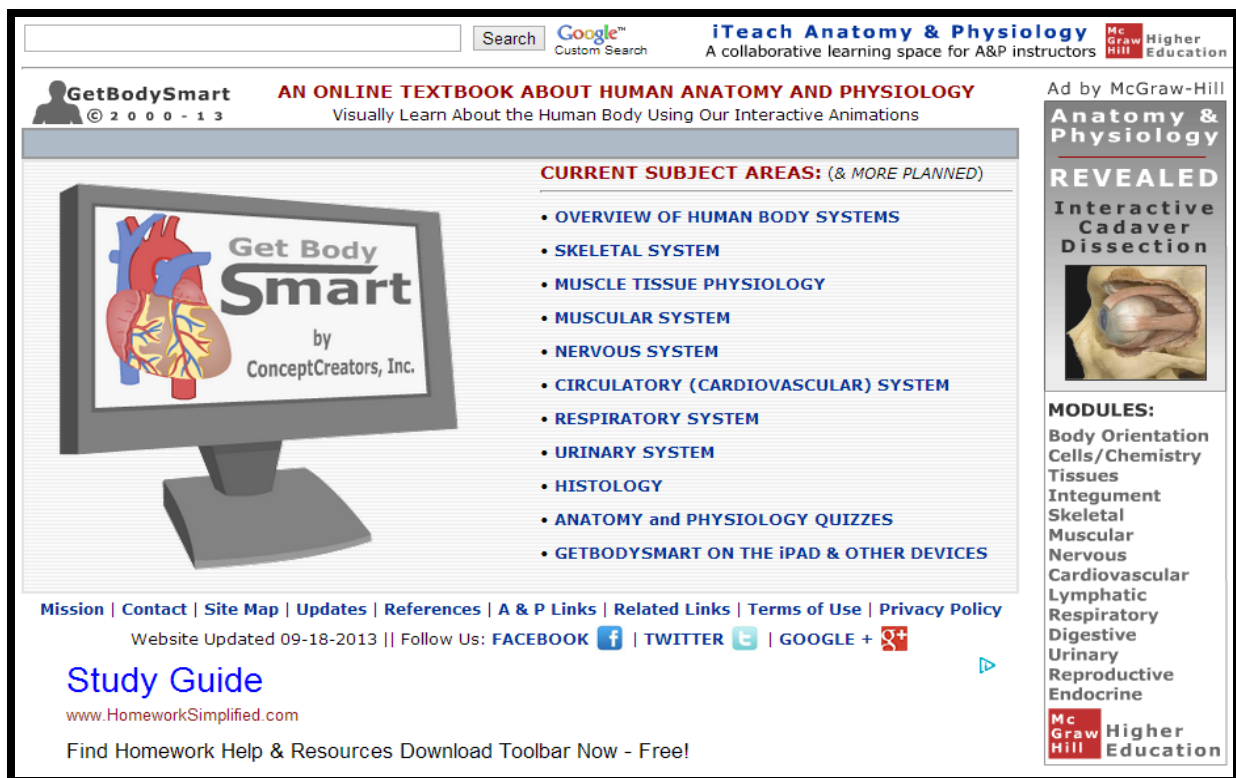


### 2.1.3 Existing Web Based Tutoring System

“GetBodySmart” is an online textbook about human anatomy and physiology developed by Scott Sheffield created free for user.

“GetBodySmart” is an online tutoring create an interactive eBook about human anatomy and physiology. Their contents and design is based on the experience that he gain from teaching at the university level. This website is constructed with free tutorials and quizzes to help and explain to students about the human anatomy and the body’s complex physiology. The develeper take me many years to develop the system into a truly comprehensive learning resource. However, this site is in early stages of development, and cause a lot of missing contents. There is more updates should be manage.

Figure below show part of the online tutoring system named “GetBodySmart” homepage and syllabus overview (Figure 2.1)



. Figure 2.1 Homepage of the Website

Homepage is state everything in blue link options including the subject syllabus, we can see it in “CURRENT SUBJECT AREA” which is the syllabus is located below the link. Figure below show the tutorial for human body organ system.

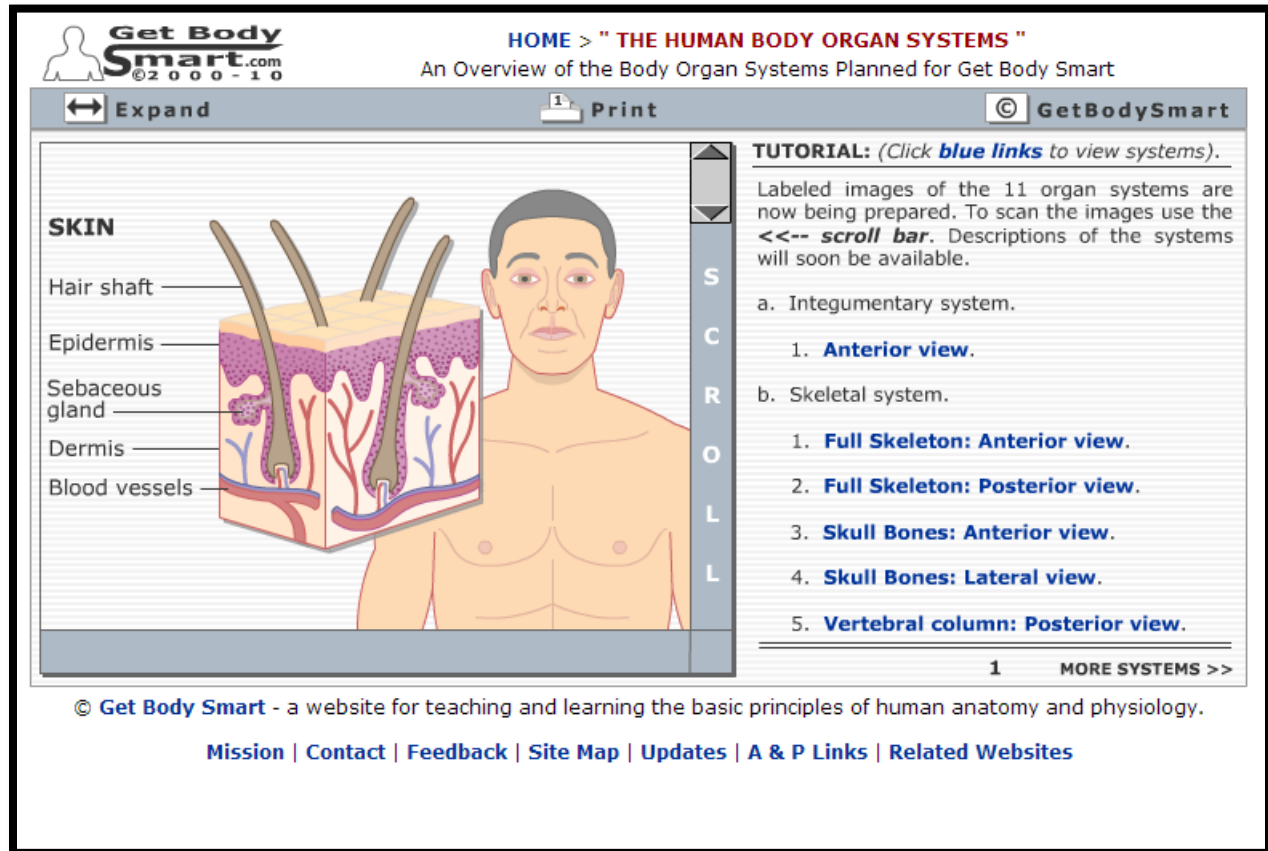


Figure 2.1.2 Tutorial of human body

In the blue link options is state the Anatomy and Physiology Quizzes. Figure below show the link for the quiz.

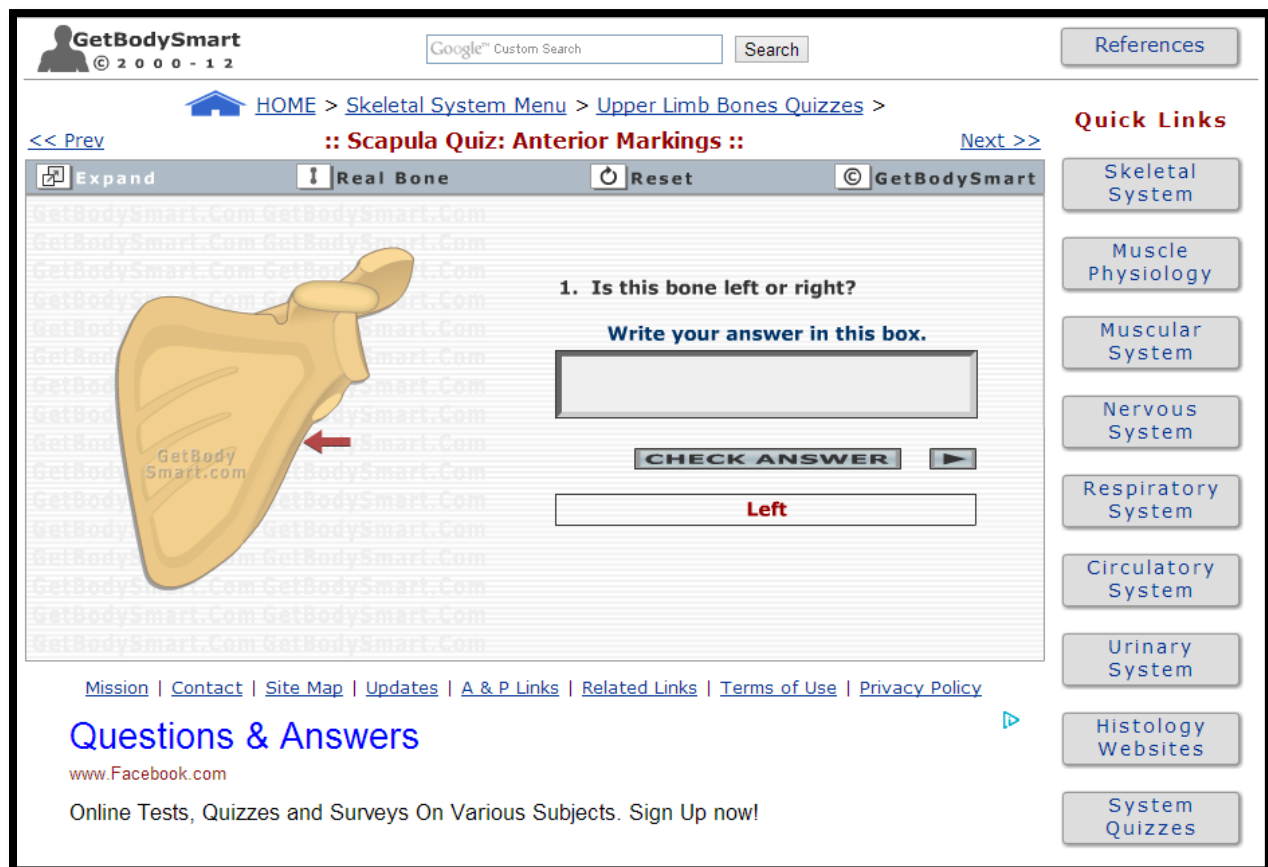


Figure 2.1.3 Quiz session

## 2.2 Flowchart and Storyboard

### 2.2.1 Flowchart

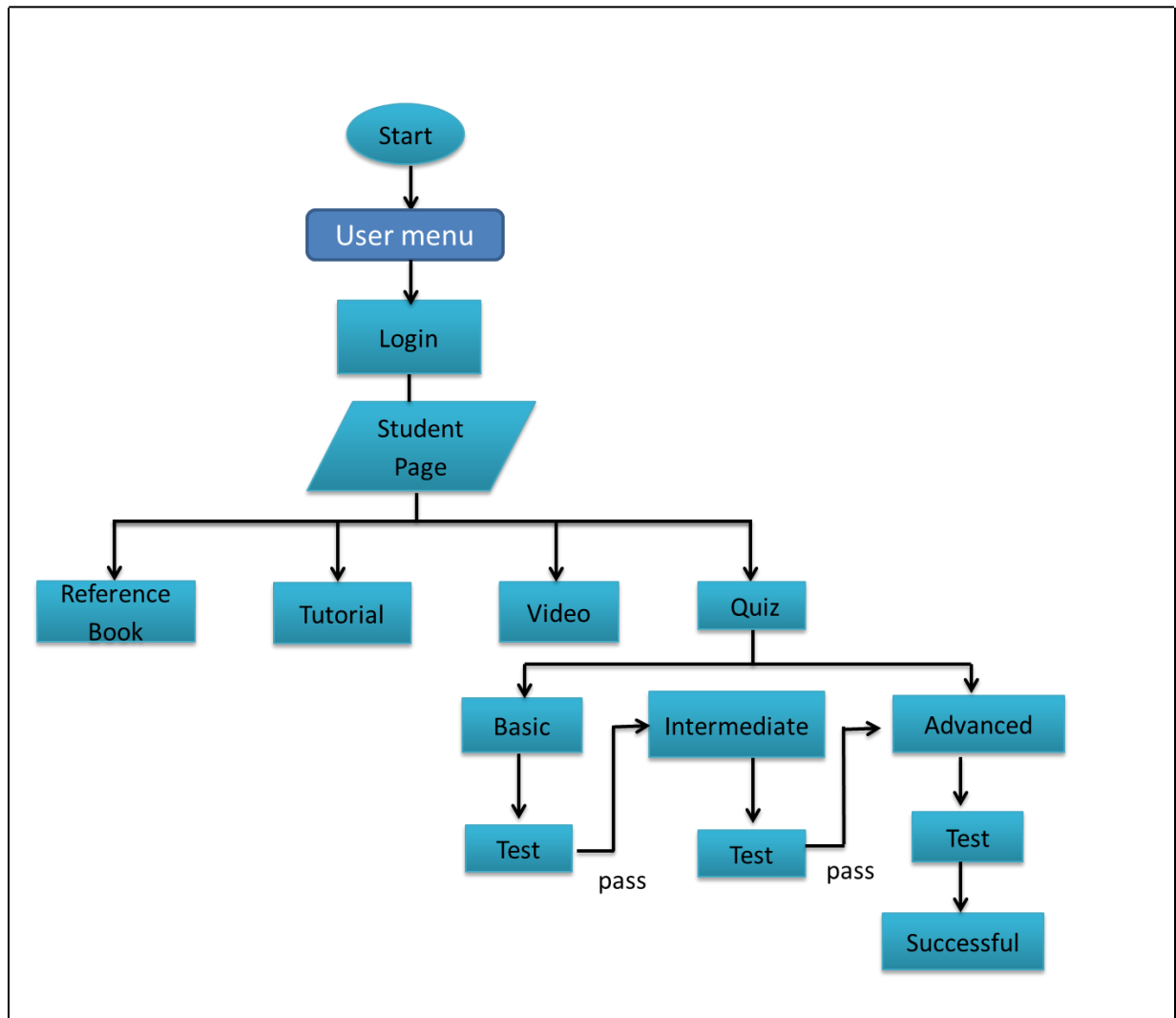


Figure 3.1 Flowchart of the Overall System

Figure 3.1 shows the overall flowchart of the system which is including three categories of educational levels which are basic, intermediate, and advanced.

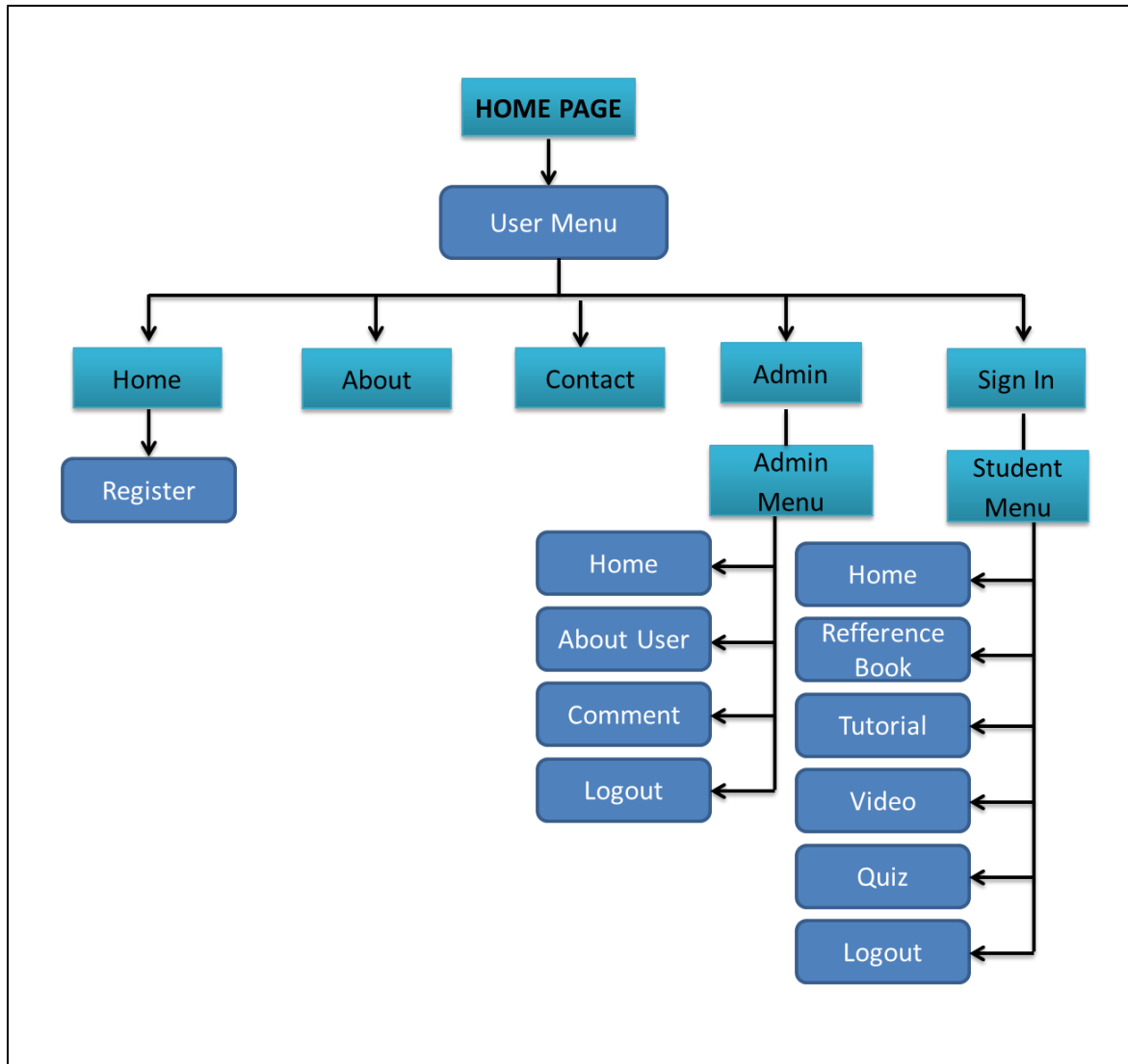
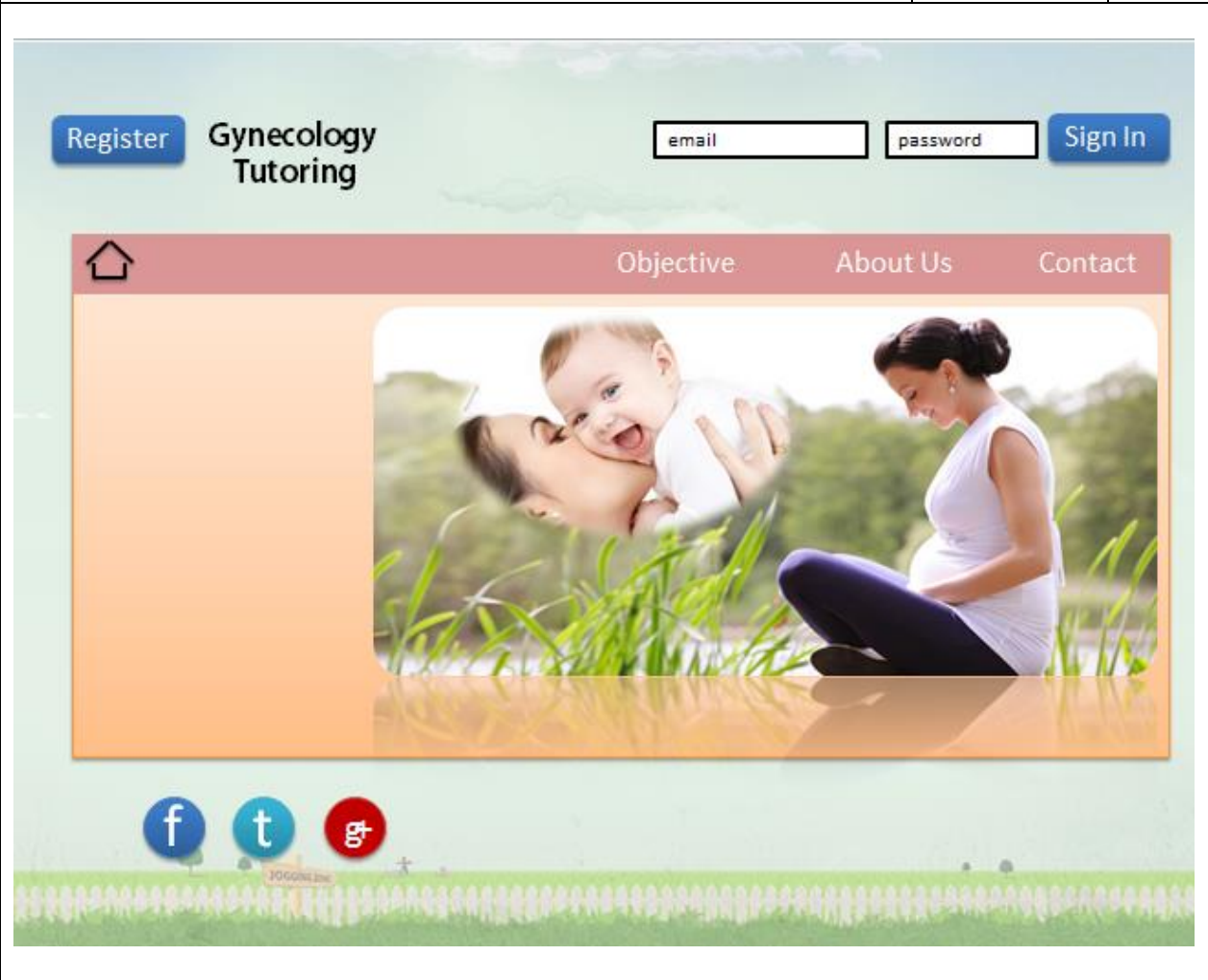
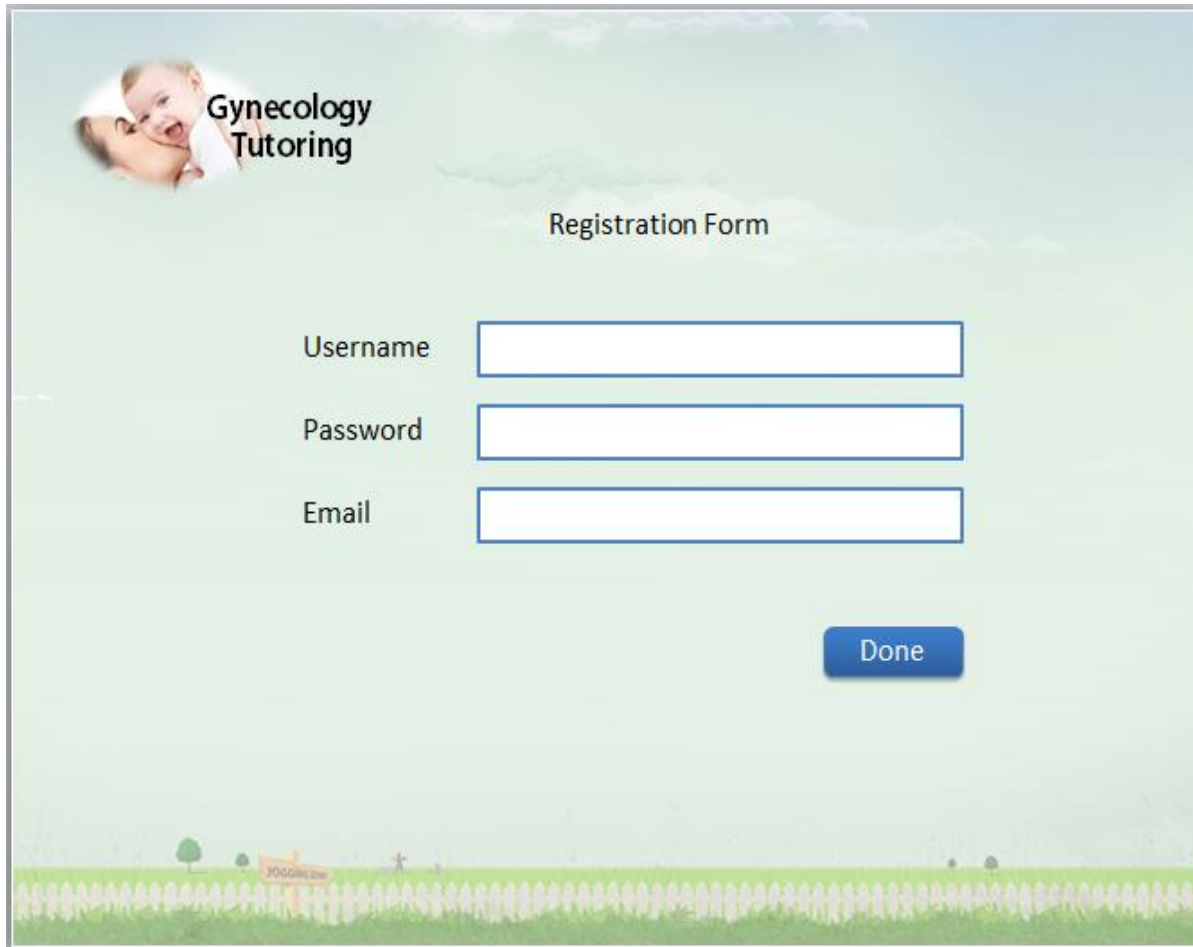


Figure 3.2 Flowchart of the System Interface

Figure 3.2 shows the flowchart of the system which is review the flow of the system interface.

### 2.2.2 Storyboard

Title : Adaptive Web Based Tutoring System – Home Page Prepared by : Siti Sabilah bt Mohd Abdullah	Page resolution :	Page: 1
		
<p>Description :</p> <p>Home Page is main part in this tutoring system, this design is described about the main menu that located in main page and also button registers there.</p>		



The image shows a registration form for a website titled "Gynecology Tutoring". The form is set against a light green background with a faint illustration of a field and a small house. In the top left corner, there is a circular logo featuring a woman and a child, with the text "Gynecology Tutoring" next to it. The title "Registration Form" is centered at the top of the form area. Below the title, there are three input fields: "Username", "Password", and "Email". Each field is a white rectangle with a blue border. To the right of each label is its corresponding input field. At the bottom right of the form, there is a blue button with the word "Done" in white text. The bottom of the page features a decorative border with a green field, a small house, and a fence.

Description :

This page is about registration form, it design for user to fill in the form in order to create account to this website.

Title : Adaptive Web Based Tutoring System – Student Page Prepared by : Siti Sabilah bt Mohd Abdullah	Page resolution :	Page: 3
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Description :

This page is review the student page for this website, whenever user sign in into the system they can have all the above figure.